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RESTORING THE PRAIRIE LANDSCAPE: LESSONS FROM THE I-35 PRAIRIE RECONSTRUCTION IN STORY COUNTY

by Dr. Thomas Rosburg

Over the last decade or so there has been an awakening, much like the blossoming of life that happens every spring, in the understanding and appreciation of the value prairie communities had, and still have, on our Iowa landscapes. It's really quite amazing. People with many different backgrounds and agencies at many different levels have all been working toward a common goal – restoration of native prairie. For one of these agencies, the Iowa Department of Transportation (DOT), the focus has been directed toward roadsides, and using prairie vegetation to enhance their ecological value.

The Integrated Roadside Vegetation Management (IRVM) program, with support from the Living Roadway Trust of the Iowa DOT, views the establishment of prairie roadsides as valuable in several ways. For one, prairie species are the best-adapted plants for these environments and once established are long-lived and weed resistant. This can translate into lower maintenance costs due to less mowing and herbicide use. Native communities along roads could also provide habitat for wildlife and link together fragmented remnants. They have educational value too, as people see these native communities more often and want to learn more about them.

One of the biggest roadside prairie projects along an Interstate highway occurs in Story County just east of Ames. In 1995 and 1996, the roadsides on I-35



between Story City on the north and Highway 30 on the south were reconstructed to prairie. The 1996 seeding encompassed the southern portion of this stretch, and has become the subject of a long-term research project funded by the Iowa DOT. The objectives of the research are to: 1) develop methodology for monitoring and evaluation of IRVM prairie reconstructions, 2) determine effects of mowing, spring fire, and fall fire on species abundance and prairie quality, and 3) investigate the effect of a late spring burn on the growth, survival, and reproduction of certain prairie forbs.

Answers to these questions are coming forth from data collected annually since 1996, the year of seeding, on 15 permanent plots located along I-35 between Highway 30 and County Road E20. At the end of each growing season, plant species abundance has been measured by counting density and frequency of stems in plots that have had different fire or mowing treatments. By making comparisons among treatments and tracking changes from year to year, valuable information has been learned about prairie reconstruction and their management.

For example, in a prairie reconstruction on land formerly vegetated with non-native grasses such as smooth brome and Kentucky bluegrass (typical for most all roadsides), the seeded prairie species must compete with these non-prairie species over the first several years. I have been monitoring the relative frequency of both the seeded prairie species and the undesirable non-seeded species. Although the proportion of seeded species was only 40% the first year (1996), after three years it has increased to about 50%.





In other words, the prairie has been slowly increasing in quality. Likewise, the proportion of seeded species that actually have become established has been steadily increasing. In 1996, only about 25% of the species seeded were observed in an average 3 by 10 meter plot. In 1999, the same average plot has about 35% of the seeded species present. This means that a few new species keep showing up each year. When people explore the pros and cons of doing a prairie reconstruction, they are often told they need to be patient because it will probably not look like much the first few years. These data from the I-35 research provide evidence that indeed, patience will be rewarded. We are seeing steady improvement of the vigor and richness of the prairie community.

The results of the fire treatments have also provided some valuable insight for management. Two of the most disliked non-native grasses have exhibited decreases in density when exposed to fire. Smooth brome was reduced by over 50% by a May burn. At the same time, the spring burn increased little bluestem (a native prairie grass) by about 40%. Another non-native species of grass, tall fescue, was reduced by about 40% by a November burn. It's clear from this study that burning at the appropriate time can be a valuable tool for increasing the quality of a prairie reconstruction. The importance of timing and goals must be emphasized. A non-native species that is difficult to control and devastating to a prairie planting is bird's foot trefoil. The I-35 data indicate that while spring burning helps to eliminate it, fall burning will invigorate its growth. Knowing what you have becomes an essential part of management.

An issue that surfaced when deciding when and if to do the spring burn was

whether a relatively late burn (May 10) would harm any of the prairie plants that were already up and growing. This is a very important question for managers. In order to answer it, individual plants of 20 different prairie species were marked on both spring burn and control plots, and then growth and flowering were monitored over the growing season after the fire. All of the plants on the spring burn plots were top-killed by the fire, but 96% of them survived and regrew from the roots. One year after the fire, their survival was the same as plants on the control plot. The late spring burn did cause some reduction in flowering. Plants on the spring burn plots had fewer individual and stems that flowered compared to the control plots. So the conclusion is that although the late spring burn did cause some stress to the prairie plants, it did not cause any long-term mortality to them, and in the bigger picture was beneficial in that it was probably a key reason for the decrease in smooth brome and bird's foot trefoil.

Work will continue for many more years on this project. There are still many unanswered questions. Reconstructions, like this one along I-35, provide a unique opportunity to see and learn how prairies "come together" – which is the kind of insight that can't be extracted very easily from natural remnants.



At the same time, motorists traveling through Story County will be treated to a dazzling display of prairie color between May and September.

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